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Featured Story: Malaria



Development of Malaria Vaccine for the Military is Accelerated by Human Challenge Testing (Cover)

From Naval Medical Research Center Public Affairs

SILVER SPRING, Md. — After extensive research and development efforts, the Naval Medical Research Center (NMRC) team at the NMRC Clinical Trials Center (CTC), located on the campus of the Walter Reed National Military Medical Center in Bethesda, Maryland, will test the effectiveness of an investigational malaria vaccine, with the help of human subjects, February 2-3, 2017. While there are personal protective measures that can be taken to help combat the threat of malaria, there is currently no licensed malaria vaccine.

“In 2015, nearly half of the countries in the world had on-going malaria transmission. This is a significant disease threat to deployed troops, with the risk varying year-to-year, depending on the location of combat, humanitarian, and peacekeeping missions. Most military personnel from developed countries are not immune to malaria, and suffer high rates of morbidity and mortality when infected,” said Eileen Villasante, PhD, Head, Malaria Department, NMRC.



The United States Military Malaria Vaccine Program (USMMVP) includes researchers from the NMRC Malaria Department, the Walter Reed Army Institute of Research (WRAIR) Malaria Vaccine Branch, and Department of Defense (DoD) medical research laboratories in Asia, Africa, and South America. (cont.)

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How Researchers Maximize Their Readiness

From Naval Health Research Center Public Affairs

SAN DIEGO —The main goal for scientists who conduct research in support of military medicine is keeping U.S. warfighters mission ready. But how do scientists and researchers maintain their own readiness? How do they sustain their ability to continually innovate, evolve their skills, and find better ways of keeping service members healthy?

One way is by attending professional meetings where the best and brightest scientific minds come together, face-to-face, to share new research findings, explore emerging trends, discover novel technologies, and—perhaps most important of all—get to know each other.

The American Society for Tropical Medicine and Hygiene’s (ASTMH) 65th annual meeting, Nov. 13-17 in Atlanta, Georgia, provided the perfect opportunity for Navy Medicine researchers to hone their own readiness by attending a meeting that draws about 4,000 of the top global health professionals. (cont.)



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NMRC Hosts a Malaria Vaccine Symposium at the 64th ASTMH Meeting

From Naval Medical Research Center Public Affairs



SILVER SPRING, Md. — The Naval Medical Research Center (NMRC) hosted a Malaria Vaccine Symposium at the American Society of Tropical Medicine and Hygiene (ASTMH) annual meeting, November 13-17 in Atlanta, Georgia.

Symposium coordinator, Capt. Judith Epstein, Clinical Director of the NMRC Malaria Vaccine Development Program, focused discussions on the safety, tolerability, immunogenicity, and efficacy results from four clinical trials that are focusing on vaccine development.

“It was my intention to bring together global leaders in the malaria vaccine development process and outline the road map ahead as we move toward licensure of an effective malaria vaccine,” said Epstein. “This is so important for the Department of Defense, because without a vaccine, deployed troops are required to take medication for the duration of their deployment. U.S. military

forces are at great risk of developing malaria while deployed in endemic areas. In fact, more person-days were lost among U.S. military personnel due to malaria than to bullets during every military campaign fought in malaria-endemic regions during the 20th century.” said Epstein.

Those who attended the malaria vaccine symposium heard the results of clinical trials assessing PfSPZ Vaccine both in malaria-naïve and semi-immune individuals and PfSPZ-CVac in malaria-naïve individuals. “Both PfSPZ Vaccine and PfSPZ-CVac malaria vaccine have the potential to meet, for the first time, the 76 percent efficacy threshold as defined by the updated malaria vaccine technology roadmap of the World Health Organization (WHO),” said Epstein, “This ground breaking potential is underlined by the first results with Pfs-CVac showing 100 percent protective efficacy against controlled human malaria infections. It was exciting to hear all the presentations at the symposium.”

The WHO Vaccine Technology Roadmap represents malaria vaccine researchers from around the world working together to form a strategic framework with the goal of having licensed vaccines by 2030 for use by the international public health community.

During the symposium Epstein explained the efficacy of the PfSPZ Vaccine as the short and long-term protection against different malaria strains. According to Epstein, vaccines are built upon the specific strains. “For example Cambodia may have a different strain from the malaria found in West Africa and people generally get infected with more than one strain,” said Epstein. “We’ve been looking at whether or not a vaccine made for one strain could provide protection from other different strains.”

“To address the threat of malaria, NMRC researchers have been investigating methods to control and conquer malaria for more than two decades. This comprehensive research program is at the forefront of malaria research and vaccine development worldwide,” added Epstein. (cont.)

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R&D Chronicles: The Mosquito Fighters, Part X:

Preventive Measures in the Atomic Age

By André B. Sobocinski, Historian, BUMED

The deployment of malaria control and epidemiology units in World War II may have minimized the toll of mosquito-borne diseases on U.S. Armed Forces, but these were intended only as temporary wartime measures. Despite the continuing need for prevention and disease control post-war the Navy disbanded most of these units during the period of demobilization.



“I have formerly observed, . . . more good will be engendered abroad by a box of pills, a hypodermic syringe or a spray gun in the hands of the right kind of doctor than by all the rocket guns and atom bombs that will ever be made.”

~Rear Adm. Lamont Pugh, Navy Surgeon General, April 1953

Three years after the war, Navy Surgeon General Clifford Swanson likened the peacetime requirement for these units to the access of basic emergency services. In a letter to the Chief of Naval Operations in 1948, Swanson stated, “...the peacetime necessity for epidemic control teams . . . somewhat parallels the necessity for fire departments in that they cannot be organized and trained after the fire breaks out.”

The Navy addressed this need in 1949 by authorizing the permanent establishment of these medical units. In January of that year, the Navy stood up the Malaria and Mosquito Control Unit (MMCU) No. 1 at the Naval Air Station, Jacksonville, Florida Under the command of Lt. Cmdr. Kenneth Knight, MSC, USN—an entomologist who had served with Dr. Saperio in Guadalcanal—the unit managed the field use of DDT (Dichlorodiphenyltrichloroethane), investigated new insecticides, explored better means of insecticide dispersal, and directed the Navy’s mosquito control policy.

MMCU would be re-designated as the Disease Vector Control Center (DVECC) in 1957. Presently known as the Navy

Entomology Center for Excellence (NECE), it operates as an echelon 5 command under the Navy and Marine Corps Public Health Center.

In March 1949, the Navy consolidated the duties of the four remaining epidemiology teams (Nos. 13, 24, 80 and 100) under five Epidemic Disease Control Units (EDCU) based at Norfolk, Virginia. (No. 2), Camp Lejeune (No. 3), Great Lakes, Illinois. (No. 4), San Diego, California (No. 5), and Pearl Harbor, Hawaii (No. 6). EDCU No. 1 was initially planned for Bethesda, Maryland, but was never placed in operation; a seventh unit was later established in Naples, Italy, in 1957. (cont.)

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R&D 2016 Senior, Junior and Blue Jacket Sailor of the Year Awards

From Naval Medical Research Center Public Affairs

SILVER SPRING, Md. – The Sailor of the Year (SOY) program is an opportunity for Sailors who have a history of command impact, mission contribution, proven leadership, a dedication to self-improvement and outstanding professionalism, to be recognized. The Naval Medical Research and Development Enterprise recently recognized three of its own as the cream of the crop by selecting the Enterprise’s Senior Sailor, Junior Sailor and Bluejacket of the Year for 2016.



The 2016 Senior Sailor of the Year is Hospital Corpsman First Class Yusupha Kah, the Junior Sailor of the Year is Hospital Corpsman Second Class Alison Heads, and the Blue Jacket of the Year award is Hospital Corpsman Third Class Justin L. Heads.

Chief Hospital Corpsman Paul Duncan, Senior Enlisted Leader, Naval Medical Research Center said, “Superior on-the-job performance, a dedication to duty and community, and exceptional leadership skills are just a few of the qualities that define what it means to be chosen as Sailor of the Year.” (cont.)

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New App for Military Hearing Conservation Programs Launched

From Naval Submarine Research Lab Public Affairs



GROTON, CT — Have questions about your hearing test? Want to know what causes tinnitus? Are you using earplugs correctly? There’s an app for that! The Warfighter’s Hearing Health Instructional Primer (WHHIP) app was launched November 30th, 2016 by the Sensimetrics Corporation, in collaboration with the Naval Submarine Medical Research Laboratory (NSMRL), with funding from the Office of Naval Research (ONR).

The WHHIP is a supplemental tool for military hearing conservation programs and can be accessed by the warfighter from a personal mobile phone. The WHHIP is the first step in the transition process for the Military Hearing Preservation (MHP) Training Kit, which was an NSMRL effort spearheaded by Dr. Lynne Marshall, now retired, to provide engaging and motivational education and training material on military hearing conservation. (cont.)

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Internal Research Showcase During Air Force-Navy 5th Annual Open House

Naval Medical Research Center - Dayton Public Affairs

DAYTON, Ohio — The Naval Medical Research Unit Dayton (NAMRU-D) and the 711th Human Performance Wing (711 HPW) held their 5th annual open house at the Wright-Patterson Air Force Base (WPAFB), October 28, 2016. A joint effort, the event allowed each commands to showcase their facilities and current projects in order to foster new connections across both scientific research organizations.

NAMRU-D researchers welcomed 711 HPW colleagues and new NAMRU-D command members into ten unique laboratories to explain how NAMRU-D research initiatives address warfighter safety. WPAFB visitors were particularly impressed with the Disorientation Research Device (DRD). Also known as the Kraken, this one-of-a-kind aviation medicine research platform is capable of multi-axis motion to include yaw, pitch, roll, and heave while undergoing planetary and linear accelerations up to 3Gs sustained. (cont.)

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NAMRU-SA Research Dentist Piques Interest of San Antonio Students During Career Day

From Naval Medical Research Unit - San Antonio Public Affairs

SAN ANTONIO — Naval Medical Research Unit San Antonio (NAMRU-SA) research dentist, Lt. Cmdr. Jeffery Hoyle inspired students and raised awareness about career paths in Navy Medicine during his talks to five classes of middle school students at the Joel C. Harris Academy in San Antonio, Texas, Nov 16.

NAMRU-SA Public Affairs: Tell us about your experience at the Joel C. Harris Academy Career Day?

Hoyle: “It was an amazing experience and opportunity to bring a view of Navy Medicine to such a richly diverse group of youth. The students were enthusiastic and engaged, and the teachers and school administration were welcoming. I spoke with about 150 students spread out across the five classes. Each session continued to grow in the number of students with my last talk having 50 students in attendance. It seems that word of mouth spread and more students wanted to meet the Navy dentist.” (cont.)

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Every Day Is World AIDS Day for the DoD HIV/AIDS Prevention Program

Naval Health Research Center Public Affairs

SAN DIEGO — The DoD HIV/AIDS Prevention Program (DHAPP), which is headquartered at the Naval Health Research Center (NHRC), hosted a World AIDS Day event Dec. 1, to mark how far the U.S. military has come in fighting the global HIV/AIDS pandemic.

“World AIDS Day is a time to look back and see how far we’ve come in combatting this disease and remember those we’ve lost,” said Dr. Rick Shaffer, DHAPP director. “It’s also a day to look forward and see what still needs to be done to end AIDS.”

Shaffer has been involved with HIV/AIDS prevention efforts since 1992, while an active duty Medical Service Corps officer at NHRC, where the Navy played a key role in early HIV prevention research. He’s also been leading DHAPP since it was launched in 2000 as the DoD Leadership and Investment in Fighting an Epidemic (LIFE) initiative, part of efforts by the White House and the Department of Defense to reduce threats to global security posed by infectious diseases. (cont.)

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Study Reveals Two Distinct Stages of Deep Sleep Using Mobile Sleep Monitoring Devices

From Naval Health Research Center Public Affairs

SAN DIEGO — A recently published study co-authored by a scientist from the Naval Health Research Center (NHRC) sought to improve methods used to score sleep quality. In doing so, researchers identified two distinct stages of deep sleep based on dominant frequency and concurrent electrodermal activity (EDA). Researchers also found that capturing sleep data using low-profile, in-home monitoring devices provided a powerful and cost-effective technique to quickly assess sleep architecture and, potentially, overall sleep quality. The study was published online in *Frontiers in Human Neuroscience*.

The study evaluated 51 participants during three nights of sleep over a two-week period, using mobile 2-channel electroencephalogram (EEG) recording devices and subjective reports of sleep quality. Sleep EEG was collected from 2 forehead leads, with ground and reference leads behind the ears. The mobile devices allowed researchers to collect high quality data while participants slept in the comfort of their own homes, allowing more natural sleep and reducing costs associated with overnight monitoring in a sleep lab. (cont.)

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